


<b>AWARD/CONTRACT</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		RATING		PAGE OF PAGES 1   2	
2. CONTRACT (Proc. Inst. Ident.) NO. EP-C-17-031/68HERC19F0265				3. EFFECTIVE DATE See Block 20C		4. REQUISITION/PURCHASE REQUEST/PROJECT NO. PR-ORD-19-01444	
5. ISSUED BY CODE		CAD		6. ADMINISTERED BY (If other than Item 5) CODE			
CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001							
7. NAME AND ADDRESS OF CONTRACTOR (No., street, country, State and ZIP Code)  TETRA TECH, INC. Attn: George Townsend 10306 EATON PL STE 340 FAIRFAX VA 22030				8. DELIVERY <input type="checkbox"/> FOB ORIGIN <input checked="" type="checkbox"/> OTHER (See below)			
				9. DISCOUNT FOR PROMPT PAYMENT			
				10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN		ITEM	
CODE 198549560		FACILITY CODE					
11. SHIP TO/MARK FOR CODE		CAD		12. PAYMENT WILL BE MADE BY CODE		RTP FMC	
CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001		RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711					
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304 (c) ( ) <input checked="" type="checkbox"/> 41 U.S.C. 3304 (a) ( )				14. ACCOUNTING AND APPROPRIATION DATA See Schedule			
15A. ITEM NO	15B. SUPPLIES/SERVICES			15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
	Continued						
15G. TOTAL AMOUNT OF CONTRACT						\$100,408.00	
<b>16. TABLE OF CONTENTS</b>							
(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES			
	A	SOLICITATION/CONTRACT FORM			I	CONTRACT CLAUSES	
	B	SUPPLIES OR SERVICES AND PRICES/COSTS		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
	C	DESCRIPTION/SPECS./WORK STATEMENT			J	LIST OF ATTACHMENTS	
	D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS			
	E	INSPECTION AND ACCEPTANCE			K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
	F	DELIVERIES OR PERFORMANCE			L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
	G	CONTRACT ADMINISTRATION DATA			M	EVALUATION FACTORS FOR AWARD	
	H	SPECIAL CONTRACT REQUIREMENTS					
<b>CONTRACTING OFFICER WILL COMPLETE ITEM 17 (SEALED-BID OR NEGOTIATED PROCUREMENT) OR 18 (SEALED-BID PROCUREMENT) AS APPLICABLE</b>							
17. <input checked="" type="checkbox"/> CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return _____ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)				18. <input type="checkbox"/> SEALED-BID AWARD (Contractor is not required to sign this document.) Your bid on Solicitation Number 68HERC19R0063 , including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your bid, and (b) this award/contract. No further contractual document is necessary. (Block 18 should be checked only when awarding a sealed-bid contract.)			
19A. NAME AND TITLE OF SIGNER (Type or print)				20A. NAME OF CONTRACTING OFFICER Andrea Dehne			
19B. NAME OF CONTRACTOR		19C. DATE SIGNED		20B. UNITED STATES OF AMERICA		20C. DATE SIGNED	
BY  (Signature of person authorized to sign)				BY  (Signature of the Contracting Officer)		ELECTRONIC SIGNATURE 09/05/2019	

## CONTINUATION SHEET

REFERENCE NO. OF DOCUMENT BEING CONTINUED  
EP-C-17-031/68HERC19F0265PAGE OF  
2 2

NAME OF OFFEROR OR CONTRACTOR

TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
0001	<p>DUNS Number: 198549560</p> <p>FFP Task Order Support for Exposure Response Methods and Summary Report</p> <p>TOCOR: Susan Cormier Max Expire Date: 03/04/2021</p> <p>Delivery: 03/04/2021</p> <p>Accounting Info:</p> <p>19-20-C-262W000-000FK7XR3-2532-26A5C-19262WC915-001</p> <p>1 BFY: 19 EFY: 20 Fund: C Budget Org: 262W000</p> <p>Program (PRC): 000FK7XR3 Budget (BOC): 2532 Cost: 26A5C DCN - Line ID: 19262WC915-001</p> <p>Period of Performance: 09/05/2019 to 03/04/2021</p> <p>Task Order Issuance Line Item: Technical Support for EPA/ORD's Ecological Assessment Programs</p> <p>Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>TOCOR: Susan Cormier/(513)569-7995/cormier.susan@epa.gov ALTOCOR: Michael Griffith/(513)569-7034/griffith.michael@epa.gov</p>				100,408.00

## PERFORMANCE WORK STATEMENT

TetraTech, Inc.  
Contract EP-C-17-031  
PR-ORD-19-01444  
SOL 68HERC19R0063  
Task Order 68HE0C19F0265

**TITLE:** Support for Exposure-Response Methods and Summary Report

<b>Task Order Contracting Officer Representative (TOCOR)</b> <b>Name:</b> Susan Cormier, Ph.D. <b>Office:</b> ORD, NCEA, USEPA 26 W. M. L. King Drive Cincinnati, OH 45268 <b>Phone:</b> 513-569-7995 (voice) <b>FAX:</b> 513-569-2540 (fax) <b>Email:</b> cormier.susan@epa.gov (email)	<b>Alternate Task Order Contracting Officer Representative (Alt.TOCOR)</b> <b>Name:</b> Michael Griffith, Ph.D. <b>Office:</b> ORD, NCEA, USEPA 26 W. M. L. King Drive Cincinnati, OH 45268 <b>Phone:</b> 513-569-7034 (voice) <b>Email:</b> Griffith.michael@epa.gov
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**PERIOD OF PERFORMANCE:** Date of TO award through 18 months following award

### PURPOSE OF TASK ORDER

The primary objective of this task order is to develop new dataset, methods, and tools and to summarize existing applications of microcosm, mesocosm and field experiments, and field observations to better understand how watersheds respond to natural and man-made influences. The success of this effort will be based on the ability of EPA personnel to understand and repeat the analyses using the open source program R, ArcGIS, and Microsoft systems as described in Task 4 and the crafting of manuscripts and other publicly available materials that report the research details of the development process for the analytical methods and analyses supporting the summary report. The second objective of the Task Order is to provide greater transparency and accessibility of the supporting analyses used to produce all methods.

### BACKGROUND

The US Environmental Protection Agency's (EPA) Office of Research and Development (ORD), provides methods and examples for discerning how pollutants may impact our health and the environment. This information is used by states, tribes, businesses, non-government agencies, EPA's program and regional office managers who use the information for making planning, regulatory, enforcement, and remedial-action decisions. EPA is committed to developing methods using field observations and models to enable decision making to adapt to changes in

water quantity and quality. To fulfill this mission, EPA requires the expertise and support as described in the contract Performance Work Statement (PWS).

Water quality and quantity is affected by natural and man-made situations, such as, hydrologic permanence affected by drought or water removal, land-cover alteration by fire or urban development, and loadings by weathering or waste discharges. The more we understand the processes that affect water quality and quantity, the better positioned we are to minimize or adapt to changing conditions and societal needs. This Task Order supports work to estimate natural background water quality and quantity. It also supports research to characterize causal relationships between sources of change and changes to water quality and quantity. These causal relationships may be used to evaluate stream condition, to assess agents and sources, to predict changing conditions, and to evaluate how decisions have or have not influenced water quality and quantity.

### **QUALITY ASSURANCE**

The tasks in this Task Order require the use of existing data and use of modeling tools for data analysis. The Contractor shall prepare a Quality Assurance Project Plan (QAPP). All QA activities shall be in conformance with this QAPP. Documentation of all analyses shall also indicate how types, quantity, and quality of data have been quality assured and maintained. In addition, the contractor shall ensure that metadata is compiled in an easy to use format. All products should be detailed so that the decisions and analysis are completely transparent to a third party. The Contractor shall alert the TOCOR regarding any quality issues should they arise. Any project specific quality assurance issues shall be reported in the monthly progress reports as specified under Task 1. The QA activities for this Task Order should comprise at least 10% of the total effort.

### **SCOPE OF WORK**

The purpose of this Task Order is to obtain contractor services to address new or modified analyses to advance the use of microcosm, mesocosm, and field data for developing stressor response models and support tools to enable states, tribes and other assessors to readily use these methods. The specific tasks are defined below. Written technical collaboration materials will be provided to the contractor for clarification purposes provided by the EPA TOCOR.

#### **Task 1: Establish Communication and Prepare Work Plan**

The Contractor shall establish communication with the EPA TOCOR and develop a regular reporting schedule. The Contractor shall contact the EPA TOCOR and schedule a kickoff project meeting. In collaboration with the EPA TOCOR the Contractor shall also establish a schedule for regular progress reports, project meetings, and other communications throughout the period of performance of this Task Order. Topics of discussion will include roles and responsibilities, points of contact and documentation protocols, timelines, QAPP, milestones and deliverables, and other Task Order administrative activities.



This task requires coordination with other federal agencies and therefore it is particularly important that the Contractor shall notify the EPA TOCOR of issues, problems, questions, or delays as soon as they become apparent or if they are anticipated. The EPA TOCOR may modify the frequency of conference call calls based on project progress. From EPA TOCOR time to time, researchers from other federal agencies may be invited by the EPA TOCOR to provide perspectives and information.

#### Task 1. Deliverables

1.1	Brief, written progress reports as email to the EPA TOCOR		Due monthly or upon request by the EPA TOCOR for the duration of this Task Order.
1.2	Project meetings and other communications, such as conference calls		Due upon request by the EPA TOCOR for the duration of this Task Order.

#### Task 2: Prepare and Implement QAPP

Because this is a continuation of previous work, the Contractor shall review and update as needed the previously approved QAPP for Task Order 6 (B-CIN-0030155) and Task Order 68HE0C18F0892 associated with this contract within 30 days after TO award for review and approval by the EPA TOCOR and the EPA QA Manager. Any changes to the existing QAPP shall include updates to personnel, any changes to the approach and measures the Contractor will implement to ensure a high standard of quality in data analysis and written deliverables. The Contractor shall not proceed with tasks needing QA review until the EPA TOCOR furnishes the Contractor, in writing, a notice that any additions to the QAPP have been accepted by EPA.

All QA activities shall be in conformance with EPA's *Requirements for Quality Assurance Project Plans* (EPA QA/R-5) "<https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5>" and should demonstrate a clear understanding of the project's goals/objectives/questions and issues. Documentation of all analyses shall also indicate how types, quantity, and quality of data have been quality assured and maintained. In particular, the quality assurance shall also ensure that metadata is compiled in an easy to use format accessible to EPA as described in Tasks 3 and 4. All products should be detailed so that the decisions and analysis are completely transparent to a third party. The Contractor shall alert the TOCOR regarding any quality issues should they arise.

#### Task 2. Deliverables

2.1	Updated existing QAPP or QAPP extension memo submitted to the EPA TOCOR and QA Manager for review.		Due 4 weeks after Task Order award
2.2	A final updated QAPP submitted to the EPA TOCOR for approval.		Due 1 week after EPA TOCOR approval of Advanced Statistical Analyses for Deliverable 2.1

### **Task 3: Respond to reviewer comments**

In 2017, EPA received comments on draft methods to use field data to develop water quality criteria. In 2018, analyses were performed to evaluate some of the concerns expressed in the public comments. In this task, the contractor is asked to provide draft responses to comments that have been summarized into 18 Excel spreadsheet pages with 232 comments.

The contractor shall provide draft responses to comments regarding the development of water quality criteria using field observational data. The TOCOR shall provide the original public comments and an excel spreadsheet that was previously prepared that grouped public comments into 18 categories.

The Contractor shall respond to comments by drawing on basic scientific knowledge and the peer reviewed literature. The Contractor may not have all the information needed to respond to all comments, and these cells should be left blank. When an Excel sheet is completed to the best of the Contractors ability, the sheet will be sent to the TOCOR to edit and will be returned to the Contractor, so that the next set of responses will be consistent and can draw upon previous responses. When necessary, new analyses may be needed. In such cases, the Contractor shall consult with the TOCOR and may prepare databases and new analyses as described in Task 4.1 or 4.2 depending on the complexity of the analysis.

#### ***Task 3. Deliverables***

3.1	Draft response to comments		2-3 Excel sheet per week for a total of not more than 8 weeks
3.2	Revision of comments		Usually within 5 business days after receipt of comments from TOCOR and or completion of new analysis
3.3	Final response to comments with list of references or analyses used to support the responses.		Within 20 business days of completion of all responses

#### **Task 4. Develop methods and analyze case examples**

The contractor shall develop and refine methods in order to respond to reviewer comments regarding field-based methods for condition, causal, predictive and outcome assessments. The contractor shall also use case examples to characterize the confidence and uncertainties in predictions using these developed methods and models. Due to the true research nature that will be performed under this Task Order, EPA TOCOR may request additional analyses or modifications of existing analyses per technical collaborations with the TOCOR. The specific analyses to be performed are dependent on issues raised by public comments. The TOCOR will describe needed tasks at the kick-off meeting and follow with regular response to submitted Excel sheets described in Task 3 as needed and as described in Tasks 4.1 and 4.2.

The contractor shall prepare scientific products appropriate for each product. These may include but are not limited to power point presentations, manuscripts, reports, HTML web material, R-code modules, Excel modules, data sets and metadata for publication, data dictionaries, CADDIS website updates, ESRI Story Maps, and GitHub ready code and data sets. The contractor may be required to obtain additional data from third party sources such as state or federal entities.

**Task 4.1: Statistical analyses, Database construction, Report sections (Basic)** These include routine activities such as: writing up methods, performing QA check on databases, obtaining databases, querying data bases, and frequentist analyses such as but not limited to descriptive statistics (e.g., mean, median, centiles, etc.), correlation analysis, box plots, contingency tables, and analyses such as conversion of units, and running regression models and random forest models. These activities take between 1 to 8 hours. In the base year, about 18 basic analyses are anticipated for Task 4.1 and will be initiated by written technical collaboration outlines from the TOCOR.

##### *Task 4.1 Deliverables*

4.1.1	Description of proposed analytical method for each analysis		Within 5 business days after completion of analyses
4.1.2	Interim analytical results		Usually within 5 business days
4.1.3	Description of methods, data sets and all product outputs		Within 20 business days of completion of analysis

**Task 4.2: Complex statistical analyses, spatial analysis, model development (Advanced)** These activities require more sophisticated skills and synthesis of disparate information. The verification of analyses and validation of models adds complexity that increases time needed to

perform the work. These activities are expected to take between 1 to 10 days. The QA and metadata pedigree (Task 5) should include the basic analyses that led to or contributed to the more complex analysis, see Task 4.1. This will reduce redundancy of reporting data sources, R-code and related scientific work. About 10 advanced analyses are expected for Task 4.2 and will be initiated by written technical directives from the TOCOR.

### *Task 3.2 Deliverables*

4.2.1	Description of proposed analytical method for each TD		Within 5 business days after completion of analyses
4.2.2	Interim analytical results		Usually within 20 business days, but may be longer for very complex analyses or models
4.2.3	Description of methods, data sets and all product outputs		Within 20 business days of completion of analysis

### **Task 5: Provide Metadata**

The Contractor shall provide complete metadata for all manipulations of datasets, documentation of all figures, tables, and analyses performed in conjunction with the development of the reports including all appendices and supporting analyses such as validation of models and predicted values. Datasets and corresponding data dictionaries used for all the analyses shall be provided as flat files (e.g., tab, or comma-delimited) as well as a data dictionary. Files shall be sorted into logical folders such as R-codes, Arc-GIS codes, excel work sheets, data sets, figures, tables, text and all other materials related to the generation of maps, statistical analysis and numeric outputs, etc. The metadata will be linked to a table of contents. The open source R-code shall be split into separate preprocessing and analytic functions.

The Contractor shall use the open source software "R" for statistical analyses unless otherwise specified with concurrence from the EPA TOCOR. Annotated code and data sets should be retained and submitted when providing results. Results and figures should be provided as code for the statistical package language that was used and provided as ppt, pdf, eps or other image software approved by the EPA TOCOR. Formulae for fitted lines should be provided. All final images should be a minimum of 300 dpi, whereas figures for publication should be 500 dpi.

Any spatial analysis, that is, the use of Geographic Information System (GIS) tools, functions, geoprocessing, and operations (e.g. map overlay, spatial query) of geographically-referenced data, shall include either a flow chart or model-builder steps that depict the data management and analysis of the GIS layers. If any scripts are used in the GIS analysis, those scripts should be annotated, retained, and submitted when providing results. Any maps produced from a GIS system shall include the source information of the data shown in the map and map projection,

which may be in Adobe PDF files or ESRI format as dictated by technical direction. FGDC compliant metadata will be developed for any newly developed GIS datasets for use with this tool.

After the construction of the metadata pedigree, the Contractor shall test the final products by having non-development personnel rerun all scripts.

#### *Task 5. Deliverables*

5.1	Metadata of analyses		Within 30 business days after completion of analyses
5.2	Complete QA and metadata pedigree		At the completion of Task 3

#### ***Technical Expertise Required for Key Contractor Staff:***

The key technical individual(s) must have experience with development of physical, chemical and aquatic life exposure-response relationships. This requires biostatistics (particularly R and writing and reviewing code), water chemistry as it relates to non-conventional pollutants and effects on aquatic life, and the relevant body of literature. In depth knowledge of the methods and analyses used to develop exposure response models with field data is necessary to summarize EPA's analyses to address public comments.

#### **Deliverables and Schedule**

Task 1: Establish Communication and Prepare Work Plan			
1.1	Brief, written progress reports as email to the EPA TOCOR		Due monthly or upon request by the EPA TOCOR for the duration of this Task Order.
1.2	Project meetings and other communications, such as conference calls		Due upon request by the EPA TOCOR for the duration of this Task Order.
Task 2: Prepare and Implement QAPP			
2.1	Updated existing QAPP or QAPP extension memo submitted to the EPA TOCOR and QA Manager for review.		Due 4 weeks after Task Order award
2.2	A final updated QAPP submitted to the EPA TOCOR for approval.		Due 1 week after EPA TOCOR approval of Advanced Statistical Analyses for Deliverable 2.1
Task 3: Respond to reviewer comments			

3.1	Draft response to comments		2-3 Excel sheet per week for a total of not more than 8 weeks
3.2	Revision of comments		Usually within 5 business days after receipt of comments from TOCOR and or completion of new analysis
3.3	Final response to comments with list of references or analyses used to support the responses.		Within 20 business days of completion of all responses
Task 4.1: Statistical analyses, Database construction, Report sections (Basic)			
4.1.1	Description of proposed analytical method for each analysis		Within 5 business days after completion of analyses
4.1.2	Interim analytical results		Usually within 5 business days
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Task 4.2: Complex statistical analyses, spatial analysis, model development (Advanced)			
4.2.1	Description of proposed analytical method for each TD		Within 5 business days after completion of analyses
4.2.2	Interim analytical results		Usually within 20 business days, but may be longer for very complex analyses or models
4.2.3	Description of methods, data sets and all product outputs		Within 20 business days of completion of analysis
Task 5: Provide Metadata			
5.1	Metadata of analyses		Within 30 business days after completion of analyses
5.2	Complete QA and metadata pedigree		At the completion of Task 3

### ACCEPTANCE CRITERIA

The Contractor shall prepare high quality products and that are reproducible and transparent. Figures submitted shall be of high quality similar to presentations developed for national scientific forums and should be formatted as jpeg or TIFF files. Text deliverables shall be provided in Microsoft Word 2010 or compatible format.

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE		PAGE OF PAGES	
						1      2	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P00001		See Block 16C		PR-ORD-19-02330		EP-C-17-031	
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
CAD							
CAD							
US Environmental Protection Agency							
26 West Martin Luther King Drive							
Mail Code: W136							
Cincinnati OH 45268-0001							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
TETRA TECH, INC.				9A. AMENDMENT OF SOLICITATION NO.			
Attn: George Townsend				9B. DATED (SEE ITEM 11)			
10306 EATON PL STE 340							
FAIRFAX VA 22030							
				x			
				10A. MODIFICATION OF CONTRACT/ORDER NO.			
				EP-C-17-031			
				68HERC19F0265			
				10B. DATED (SEE ITEM 13)			
				09/05/2019			
CODE 198549560		FACILITY CODE					
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
See Schedule							
<b>13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.</b>							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
X	D. OTHER (Specify type of modification and authority) BILATERAL AGREEMENT-NO COST NO POP EXTENSION-SHIFTING WORK WITHIN SCOPE (SEE ATTACHED PWS)						
E. IMPORTANT: Contractor <input type="checkbox"/> is not <input checked="" type="checkbox"/> is required to sign this document and return <u>1</u> copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 198549560							
FFP Task Order Support for Exposure Response Methods and Summary Report							
TOCOR: Susan Cormier Max Expire Date: 03/04/2021							
LIST OF CHANGES:							
Reason for Modification: Other Administrative Action							
BILATERAL AGREEMENT-NO COST NO POP EXTENSION-SHIFTING WORK WITHIN SCOPE (SEE ATTACHED PWS)							
Shifting work results in removal of responding to reviewer comments and adds to developing methods and analyses.							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Andrea Dehne			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
				 (Signature of Contracting Officer)		ELECTRONIC SIGNATURE 09/23/2019	
(Signature of person authorized to sign)							

<b>CONTINUATION SHEET</b>	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-C-17-031/68HERC19F0265/P00001	2	2

NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Note: Change in PWS Task numbering due to shift.</p> <p>Payment:</p> <p>RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 09/05/2019 to 03/04/2021</p> <p>TOCOR: Susan Cormier/ (513) 569-7995/cormier.susan@epa.gov ALTOCOR: Michael Griffith/ (513) 569-7034/griffith.michael@epa.gov</p>				



## PERFORMANCE WORK STATEMENT

TetraTech, Inc.

Contract EP-C-17-031 PR-ORD-19-01444

SOL 68HERC19R0063

Task Order 68HE0C19F0265

### Amendment 1

**TITLE:** Support for Exposure-Response Methods and Summary Report

<b>Task Order Contracting Officer Representative (TOCOR)</b> <b>Name:</b> Susan Cormier, Ph.D. <b>Office:</b> ORD, NCEA, USEPA 26 W. M. L. King Drive Cincinnati, OH 45268 <b>Phone:</b> 513-569-7995 (voice) <b>FAX:</b> 513-569-2540 (fax) <b>Email:</b> cormier.susan@epa.gov (email)	<b>Alternate Task Order Contracting Officer Representative (Alt.TOCOR)</b> <b>Name:</b> Michael Griffith, Ph.D. <b>Office:</b> ORD, NCEA, USEPA 26 W. M. L. King Drive Cincinnati, OH 45268 <b>Phone:</b> 513-569-7034 (voice) <b>Email:</b> Griffith.michael@epa.gov
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**PERIOD OF PERFORMANCE:** Date of TO award through 18 months following award

### PURPOSE OF TASK ORDER

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The US Environmental Protection Agency's (EPA) Office of Research and Development (ORD), provides methods and examples for discerning how pollutants may impact our health and the environment. This information is used by states, tribes, businesses, non-government agencies, EPA's program and regional office managers who use the information for making planning, regulatory, enforcement, and remedial-action decisions. EPA is committed to developing methods using field observations and models to enable decision making to adapt to changes in

water quantity and quality. To fulfill this mission, EPA requires the expertise and support as described in the contract Performance Work Statement (PWS).

Water quality and quantity is affected by natural and man-made situations, such as, hydrologic permanence affected by drought or water removal, land-cover alteration by fire or urban development, and loadings by weathering or waste discharges. The more we understand the processes that affect water quality and quantity, the better positioned we are to minimize or adapt to changing conditions and societal needs. This Task Order supports work to estimate natural background water quality and quantity. It also supports research to characterize causal relationships between sources of change and changes to water quality and quantity. These causal relationships may be used to evaluate stream condition, to assess agents and sources, to predict changing conditions, and to evaluate how decisions have or have not influenced water quality and quantity.

### **QUALITY ASSURANCE**

The tasks in this Task Order require the use of existing data and use of modeling tools for data analysis. The Contractor shall prepare a Quality Assurance Project Plan (QAPP). All QA activities shall be in conformance with this QAPP. Documentation of all analyses shall also indicate how types, quantity, and quality of data have been quality assured and maintained. In addition, the contractor shall ensure that metadata is compiled in an easy to use format. All products should be detailed so that the decisions and analysis are completely transparent to a third party. The Contractor shall alert the TOCOR regarding any quality issues should they arise. Any project specific quality assurance issues shall be reported in the monthly progress reports as specified under Task 1. The QA activities for this Task Order should comprise at least 10% of the total effort.

### **SCOPE OF WORK**

The purpose of this Task Order is to obtain contractor services to address new or modified analyses to advance the use of microcosm, mesocosm, and field data for developing stressor response models and support tools to enable states, tribes and other assessors to readily use these methods. The specific tasks are defined below. Written technical collaboration materials will be provided to the contractor for clarification purposes provided by the EPA TOCOR.

#### **Task 1: Establish Communication and Prepare Work Plan**

The Contractor shall establish communication with the EPA TOCOR and develop a regular reporting schedule. The Contractor shall contact the EPA TOCOR and schedule a kickoff project meeting. In collaboration with the EPA TOCOR the Contractor shall also establish a schedule for regular progress reports, project meetings, and other communications throughout the period of performance of this Task Order. Topics of discussion will include roles and responsibilities,

points of contact and documentation protocols, timelines, QAPP, milestones and deliverables, and other Task Order administrative activities.

This task requires coordination with other federal agencies and therefore it is particularly important that the Contractor shall notify the EPA TOCOR of issues, problems, questions, or delays as soon as they become apparent or if they are anticipated. The EPA TOCOR may modify the frequency of conference call calls based on project progress. From EPA TOCOR time to time, researchers from other federal agencies may be invited by the EPA TOCOR to provide perspectives and information.

#### Task 1. Deliverables

1.1	Brief, written progress reports as email to the EPA TOCOR		Due monthly or upon request by the EPA TOCOR for the duration of this Task Order.
1.2	Project meetings and other communications, such as conference calls		Due upon request by the EPA TOCOR for the duration of this Task Order.

#### Task 2: Prepare and Implement QAPP

Because this is a continuation of previous work, the Contractor shall review and update as needed the previously approved QAPP for Task Order 6 (B-CIN-0030155) and Task Order 68HE0C18F0892 associated with this contract within 30 days after TO award for review and approval by the EPA TOCOR and the EPA QA Manager. Any changes to the existing QAPP shall include updates to personnel, any changes to the approach and measures the Contractor will implement to ensure a high standard of quality in data analysis and written deliverables. The Contractor shall not proceed with tasks needing QA review until the EPA TOCOR furnishes the Contractor, in writing, a notice that any additions to the QAPP have been accepted by EPA.

All QA activities shall be in conformance with EPA's *Requirements for Quality Assurance Project Plans* (EPA QA/R-5) "<https://www.epa.gov/quality/guidance-quality-assurance-project-plansepa-qag-5>" and should demonstrate a clear understanding of the project's goals/objectives/questions and issues. Documentation of all analyses shall also indicate how types, quantity, and quality of data have been quality assured and maintained. In particular, the quality assurance shall also ensure that metadata is compiled in an easy to use format accessible to EPA as described in Tasks 3 and 4. All products should be detailed so that the decisions and analysis are completely transparent to a third party. The Contractor shall alert the TOCOR regarding any quality issues should they arise.

### *Task 2. Deliverables*

2.1	Updated existing QAPP or QAPP extension memo submitted to the EPA TOCOR and QA Manager for review.	Due 4 weeks after Task Order award
2.2	A final updated QAPP submitted to the EPA TOCOR for approval.	Due 1 week after EPA TOCOR approval of Advanced Statistical Analyses for Deliverable 2.1

### **~~Task 3: Respond to reviewer comments~~**

~~In 2017, EPA received comments on draft methods to use field data to develop water quality criteria. In 2018, analyses were performed to evaluate some of the concerns expressed in the public comments. In this task, the contractor is asked to provide draft responses to comments that have been summarized into 18 Excel spreadsheet pages with 232 comments.~~

~~The contractor shall provide draft responses to comments regarding the development of water quality criteria using field observational data. The TOCOR shall provide the original public comments and an excel spreadsheet that was previously prepared that grouped public comments into 18 categories.~~

~~The Contractor shall respond to comments by drawing on basic scientific knowledge and the peer reviewed literature. The Contractor may not have all the information needed to respond to all comments, and these cells should be left blank. When an Excel sheet is completed to the best of the Contractors ability, the sheet will be sent to the TOCOR to edit and will be returned to the Contractor, so that the next set of responses will be consistent and can draw upon previous responses. When necessary, new analyses may be needed. In such cases, the Contractor shall consult with the TOCOR and may prepare databases and new analyses as described in Task 4.1 or 4.2 depending on the complexity of the analysis.~~

### *Task 3. Deliverables*

<del>3.1</del>	<del>Draft response to comments</del>	<del>2-3 Excel sheet per week for a total of not more than 8 weeks</del>
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3.2	Revision of comments		Usually within 5 business days after receipt of comments from TOCOR and or completion of new analysis
3.3	Final response to comments with list of references or analyses used to support the responses.		Within 20 business days of completion of all responses

### Task 4.3. Develop methods and analyze case examples

The contractor shall develop and refine methods in order to respond to reviewer comments regarding field-based methods for condition, causal, predictive and outcome assessments. The contractor shall also use case examples to characterize the confidence and uncertainties in predictions using these developed methods and models. Due to the true research nature that will be performed under this Task Order, EPA TOCOR may request additional analyses or modifications of existing analyses per technical collaborations with the TOCOR. The specific analyses to be performed are dependent on issues raised by public comments. The TOCOR will describe needed tasks at the kick-off meeting and follow with regular response to submitted Excel sheets described in Task 3 as needed and as described in Tasks 4.3.1 and 4.3.2.

The contractor shall prepare scientific products appropriate for each product. These may include but are not limited to power point presentations, manuscripts, reports, HTML web material, R-code modules, Excel modules, data sets and metadata for publication, data dictionaries, CADDIS website updates, ESRI Story Maps, and GitHub ready code and data sets. The contractor may be required to obtain additional data from third party sources such as state or federal entities.

**Task 4.1 3.1: Statistical analyses, Database construction, Report sections (Basic)** These include routine activities such as: writing up methods, performing QA check on databases, obtaining databases, querying data bases, and frequentist analyses such as but not limited to descriptive statistics (e.g., mean, median, centiles, etc.), correlation analysis, box plots, contingency tables, and analyses such as conversion of units, and running regression models and random forest models. These activities take between 1 to 8 hours. In the base year, about 18 36 basic analyses are anticipated for Task 4.3.1 and will be initiated by written technical collaboration outlines from the TOCOR.

#### Task 4.1 3.1 Deliverables

<del>4.1.1</del> 3.1.1	Description of proposed analytical method for each analysis		Within 5 business days after completion of analyses
<del>4.1.2</del> 3.1.2	Interim analytical results		Usually within 5 business days
<del>4.1.3</del> 3.1.3	Description of methods, data sets and all product outputs		Within 20 business days of completion of analysis

#### **Task ~~4.2~~ 3.2: Complex statistical analyses, spatial analysis, model development (Advanced)**

These activities require more sophisticated skills and synthesis of disparate information. The verification of analyses and validation of models adds complexity that increases time needed to perform the work. These activities are expected to take between 1 to 10 days. The QA and metadata pedigree (Task ~~5.4~~ 4) should include the basic analyses that led to or contributed to the more complex analysis, see Task ~~4.3~~ 3.1. This will reduce redundancy of reporting data sources, R code and related scientific work. About ~~10~~ 20 advanced analyses are expected for Task ~~4.3~~ 3.2 and will be initiated by written technical directives from the TOCOR.

#### *Task ~~3.4~~ 2 Deliverables*

<del>4.2.1</del> 3.2.1	Description of proposed analytical method for each TD		Within 5 business days after completion of analyses
<del>4.2.2</del> 3.2.2	Interim analytical results		Usually within 20 business days, but may be longer for very complex analyses or models
<del>4.2.3</del> 3.2.3	Description of methods, data sets and all product outputs		Within 20 business days of completion of analysis

#### **Task ~~5~~ 4: Provide Metadata**

The Contractor shall provide complete metadata for all manipulations of datasets, documentation of all figures, tables, and analyses performed in conjunction with the development of the reports including all appendices and supporting analyses such as validation of models and predicted values. Datasets and corresponding data dictionaries used for all the analyses shall be provided as flat files (e.g., tab, or comma-delimited) as well as a data dictionary. Files shall be sorted into logical folders such as R-codes, Arc-GIS codes, excel work sheets, data sets, figures, tables, text and all other materials related to the generation of maps, statistical analysis and numeric outputs, etc. The metadata will be linked to a table of contents. The open source R-code shall be split into separate preprocessing and analytic functions.

The Contractor shall use the open source software "R" for statistical analyses unless otherwise specified with concurrence from the EPA TOCOR. Annotated code and data sets should be retained and submitted when providing results. Results and figures should be provided as code for the statistical package language that was used and provided as ppt, pdf, eps or other image software approved by the EPA TOCOR. Formulae for fitted lines should be provided. All final images should be a minimum of 300 dpi, whereas figures for publication should be 500 dpi.

Any spatial analysis, that is, the use of Geographic Information System (GIS) tools, functions, geoprocessing, and operations (e.g. map overlay, spatial query) of geographically-referenced data, shall include either a flow chart or model-builder steps that depict the data management and analysis of the GIS layers. If any scripts are used in the GIS analysis, those scripts should be annotated, retained, and submitted when providing results. Any maps produced from a GIS system shall include the source information of the data shown in the map and map projection, which may be in Adobe PDF files or ESRI format as dictated by technical direction. FGDC compliant metadata will be developed for any newly developed GIS datasets for use with this tool.

After the construction of the metadata pedigree, the Contractor shall test the final products by having non-development personnel rerun all scripts.

#### *Task 5.4 Deliverables*

<del>5.1</del> 4.1	Metadata of analyses		Within 30 business days after completion of analyses
<del>5.2</del> 4.2	Complete QA and metadata pedigree		At the completion of Task <del>3 2.3</del>

#### ***Technical Expertise Required for Key Contractor Staff:***

The key technical individual(s) must have experience with development of physical, chemical and aquatic life exposure-response relationships. This requires biostatistics (particularly R and writing and reviewing code), water chemistry as it relates to non-conventional pollutants and effects on aquatic life, and the relevant body of literature. In depth knowledge of the methods and analyses used to develop exposure response models with field data is necessary to summarize EPA's analyses to address public comments.

#### **Deliverables and Schedule**

Task 1: Establish Communication and Prepare Work Plan			
1.1	Brief, written progress reports as email to the EPA TOCOR		Due monthly or upon request by the EPA TOCOR for the duration of this Task Order.
1.2	Project meetings and other communications, such as conference calls		Due upon request by the EPA TOCOR for the duration of this Task Order.
Task 2: Prepare and Implement QAPP			
2.1	Updated existing QAPP or QAPP extension memo submitted to the EPA TOCOR and QA Manager for review.		Due 4 weeks after Task Order award
2.2	A final updated QAPP submitted to the EPA TOCOR for approval.		Due 1 week after EPA TOCOR approval of Advanced Statistical Analyses for Deliverable 2.1
<del>Task 3: Respond to reviewer comments</del>			
<del>3.1</del>	<del>Draft response to comments</del>		<del>2-3 Excel sheet per week for a total of not more than 8 weeks</del>
<del>3.2</del>	<del>Revision of comments</del>		<del>Usually within 5 business days after receipt of comments from TOCOR and or completion of new analysis</del>
<del>3.3</del>	<del>Final response to comments with list of references or analyses used to support the responses.</del>		<del>Within 20 business days of completion of all responses</del>
Task 4.1 3.1: Statistical analyses, Database construction, Report sections (Basic)			
<del>4.1.1</del> 3.1.1	Description of proposed analytical method for each analysis		Within 5 business days after completion of analyses
<del>4.1.2</del> 3.1.2	Interim analytical results		Usually within 5 business days
<del>4.1.3</del> 3.1.3	Description of methods, data sets and all product outputs		Within 20 business days of completion of analysis
Task 4.2 3.2: Complex statistical analyses, spatial analysis, model development (Advanced)			



<del>4.2.1</del> 3.2.1	Description of proposed analytical method for each TD		Within 5 business days after completion of analyses
<del>4.2.2</del> 3.2.2	Interim analytical results		Usually within 20 business days, but may be longer for very complex analyses or models
<del>4.2.3</del> 3.2.3	Description of methods, data sets and all product outputs		Within 20 business days of completion of analysis
Task 5 4: Provide Metadata			
<del>5.1</del> 4.1	Metadata of analyses		Within 30 business days after completion of analyses
<del>5.2</del> 4.2	Complete QA and metadata pedigree		At the completion of Task 3

#### ACCEPTANCE CRITERIA

The Contractor shall prepare high quality products and that are reproducible and transparent. Figures submitted shall be of high quality similar to presentations developed for national scientific forums and should be formatted as jpeg or TIFF files. Text deliverables shall be provided in Microsoft Word 2010 or compatible format.

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE		PAGE OF PAGES 1 1	
2. AMENDMENT/MODIFICATION NO. P00002		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO.	
5. PROJECT NO. (If applicable) EP-C-17-031		6. ISSUED BY CODE CAD		7. ADMINISTERED BY (If other than Item 6) CODE	
CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001					
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)  TETRA TECH, INC. Attn: John Hochheimer 10306 EATON PL STE 340 FAIRFAX VA 22030		(x)		9A. AMENDMENT OF SOLICITATION NO.	
				9B. DATED (SEE ITEM 11)	
		x		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-17-031 68HERC19F0265	
				10B. DATED (SEE ITEM 13) 09/05/2019	
CODE 198549560		FACILITY CODE			

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.  
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
X	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

**E. IMPORTANT:** Contractor ☒ is not ☐ is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: 198549560

FFP Task Order Support for Exposure Response Methods and Summary Report

TOCOR: Susan Cormier Max Expire Date: 03/04/2021

The purpose of this modification is to incorporate the attached EPA blanket administrative modification signed by Raoul Scott on July 30, 2020. All other terms and conditions remain unchanged.

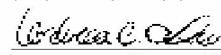
Payment:

Period of Performance: 09/05/2019 to 03/04/2021

TOCOR: Susan Cormier/(513)569-7995/cormier.susan@epa.gov

ALTOCOR: Michael Griffith/(513)569-7034/griffith.michael@epa.gov

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Andrea Dehne	
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	16C. DATE SIGNED 10/09/2020

Previous edition unusable

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE		PAGE OF PAGES	
2. AMENDMENT/MODIFICATION NUMBER		3. EFFECTIVE DATE 08/13/2020		4. REQUISITION/PURCHASE REQUISITION NUMBER		5. PROJECT NUMBER (If applicable)	
6. ISSUED BY Raoul D. Scott, Director OMS/ARM/OAS/Policy, Training and Oversight Division US Environmental Protection Agency, Mail Code 3802R 1200 Pennsylvania Avenue, NW Washington, DC 20004		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (Number, street, county, State and ZIP Code)  To All EPA Contractors				<input checked="" type="checkbox"/> (X)		9A. AMENDMENT OF SOLICITATION NUMBER	
				<input type="checkbox"/>		9B. DATED (SEE ITEM 11)	
				<input checked="" type="checkbox"/> (X)		10A. MODIFICATION OF CONTRACT/ORDER NUMBER To all EPA Contracts and Orders	
				<input type="checkbox"/>		10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					

### 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:  
 (a) By completing items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

### 13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NUMBER AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NUMBER IN ITEM 10A.
<input type="checkbox"/>	
<input checked="" type="checkbox"/> (X)	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
<input type="checkbox"/>	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
<input type="checkbox"/>	D. OTHER (Specify type of modification and authority)

**E. IMPORTANT:** Contractor ☒ is not ☐ is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

This contract/order is being modified in accordance with the applicability instructions in interim FAR Case 2019-009, and FAR 4.2105, requiring contracting officers to include FAR clause 52.204-25, Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

See attached for the full text version of FAR 52.204-25. Contractor Acknowledgment of receipt required.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Raoul D. Scott, Director Policy, Training and Oversight Division	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  RAOUL SCOTT Digitally signed by RAOUL SCOTT Date: 2020.07.30 11:40:17 -04'00'	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Officer)	

Previous edition unusable

**STANDARD FORM 30 (REV. 11/2016)**  
Prescribed by GSA FAR (48 CFR) 53.243

## **52.204-25 Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.**

As prescribed in 4.2105(b) and in the applicability instructions in interim FAR Case 2019-009, insert the following clause:

### **Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment (Aug 2020)**

(a) Definitions. As used in this clause—

*Backhaul* means intermediate links between the core network, or backbone network, and the small subnetworks at the edge of the network (e.g., connecting cell phones/towers to the core telephone network). Backhaul can be wireless (e.g., microwave) or wired (e.g., fiber optic, coaxial cable, Ethernet).

*Covered foreign country* means The People's Republic of China.

*Covered telecommunications equipment or services* means—

(1) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);

(2) For the purpose of public safety, security of Government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);

(3) Telecommunications or video surveillance services provided by such entities or using such equipment; or

(4) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

*Critical technology* means—

(1) Defense articles or defense services included on the United States Munitions List set forth in the International Traffic in Arms Regulations under subchapter M of chapter I of title 22, Code of Federal Regulations;

(2) Items included on the Commerce Control List set forth in Supplement No. 1 to part 774 of the Export Administration Regulations under subchapter C of chapter VII of title 15, Code of Federal Regulations, and controlled-

(i) Pursuant to multilateral regimes, including for reasons relating to national security, chemical and biological weapons proliferation, nuclear nonproliferation, or missile technology; or

(ii) For reasons relating to regional stability or surreptitious listening;

(3) Specially designed and prepared nuclear equipment, parts and components, materials, software, and technology covered by part 810 of title 10, Code of Federal Regulations (relating to assistance to foreign atomic energy activities);

(4) Nuclear facilities, equipment, and material covered by part 110 of title 10, Code of Federal Regulations (relating to export and import of nuclear equipment and material);

(5) Select agents and toxins covered by part 331 of title 7, Code of Federal Regulations, part 121 of title 9 of such Code, or part 73 of title 42 of such Code; or

(6) Emerging and foundational technologies controlled pursuant to section 1758 of the Export Control Reform Act of 2018 (50 U.S.C. 4817).

*Interconnection arrangements* means arrangements governing the physical connection of two or more networks to allow the use of another's network to hand off traffic where it is ultimately delivered (e.g., connection of a customer of telephone provider A to a customer of telephone company B) or sharing data and other information resources.

*Reasonable inquiry* means an inquiry designed to uncover any information in the entity's possession about the identity of the producer or provider of covered telecommunications equipment or services used by the entity that excludes the need to include an internal or third-party audit.

*Roaming* means cellular communications services (e.g., voice, video, data) received from a visited network when unable to connect to the facilities of the home network either because signal coverage is too weak or because traffic is too high.

*Substantial or essential component* means any component necessary for the proper function or performance of a piece of equipment, system, or service.

(b) Prohibition. (1) Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2019, from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. The Contractor is prohibited from providing to the Government any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104.

(2) Section 889(a)(1)(B) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2020, from entering into a contract, or extending or renewing a contract, with an entity that uses any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104. This prohibition applies to the use of covered telecommunications equipment or services, regardless of whether that use is in performance of work under a Federal contract.

(c) *Exceptions.* This clause does not prohibit contractors from providing—

(1) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(2) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(d) Reporting requirement.

(1) In the event the Contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the Contractor is notified of such by a subcontractor at any tier or by any other source, the Contractor shall report the information in paragraph (d)(2) of this clause to the Contracting Officer, unless elsewhere in this contract are established procedures for reporting the information; in the case of the Department of Defense, the Contractor shall report to the website at <https://dibnet.dod.mil>. For indefinite delivery contracts, the Contractor shall report to the Contracting Officer for the indefinite delivery contract and the Contracting Officer(s) for any affected order or, in the case of the Department of Defense, identify both the indefinite delivery contract and any affected orders in the report provided at <https://dibnet.dod.mil>.

(2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause

(i) Within one business day from the date of such identification or notification: the contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: any further available information about mitigation actions undertaken or recommended. In addition, the Contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) *Subcontracts*. The Contractor shall insert the substance of this clause, including this paragraph (e) and excluding paragraph (b)(2), in all subcontracts and other contractual instruments, including subcontracts for the acquisition of commercial items.

(End of clause)

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>			1. CONTRACT ID CODE		PAGE OF PAGES 1 2		
2. AMENDMENT/MODIFICATION NO. P00003		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO. PR-ORD-21-00663		5. PROJECT NO. (If applicable) EP-C-17-031	
6. ISSUED BY CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001		CODE CAD		7. ADMINISTERED BY (If other than Item 6)		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)  TETRA TECH, INC. Attn: John Hochheimer 10306 EATON PL STE 340 FAIRFAX VA 22030				(x)		9A. AMENDMENT OF SOLICITATION NO.	
						9B. DATED (SEE ITEM 11)	
				x		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-17-031 68HERC19F0265	
						10B. DATED (SEE ITEM 13) 09/05/2019	
CODE 198549560		FACILITY CODE					

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.  
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) BILATERAL AGREEMENT - CONFIRM DELIVERABLE RECEIPT IN FULL FOR TASK ORDER CLOSEOUT

**E. IMPORTANT:** Contractor ☐ is not ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: 198549560

FFP Task Order Support for Exposure Response Methods and Summary Report

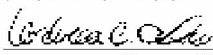
TOCOR: Susan Cormier Max Expire Date: 03/04/2021

LIST OF CHANGES:

Reason for Modification: Confirm Order Close Out

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Andrea Dehne	
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	16C. DATE SIGNED 03/17/2021

Previous edition unusable



<b>CONTINUATION SHEET</b>	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-C-17-031/68HERC19F0265/P00003	2	2

NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711 Period of Performance: 09/05/2019 to 03/04/2021 TOCOR: Susan Cormier/ (513) 569-7995/cormier.susan@epa.gov ALTOCOR: Michael Griffith/ (513) 569-7034/griffith.michael@epa.gov				